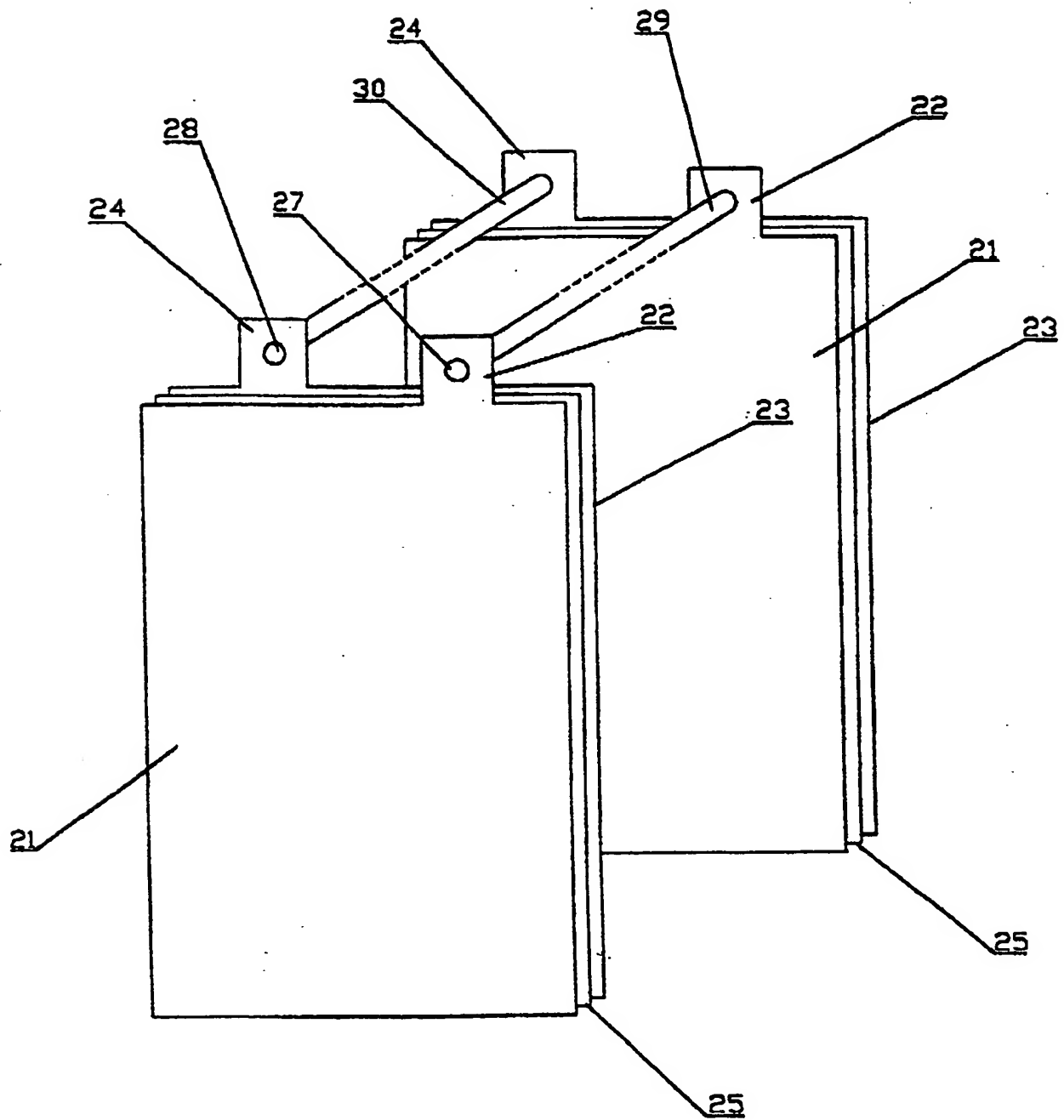
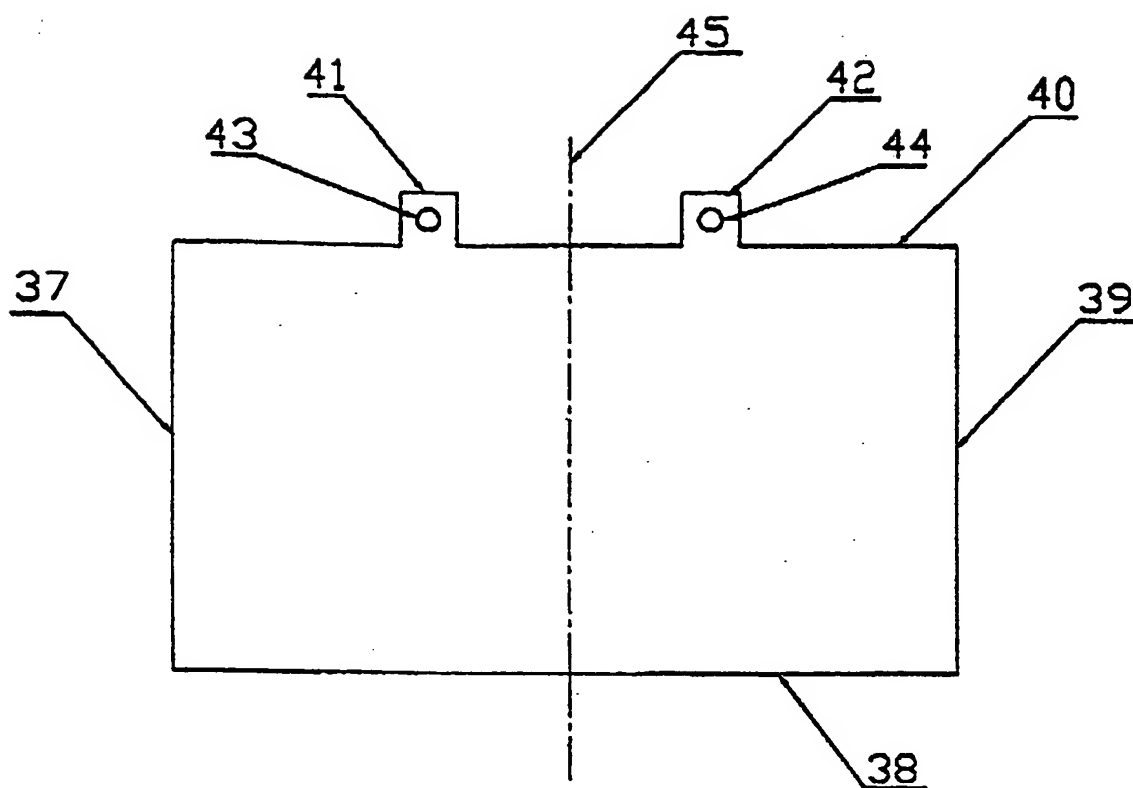


**Figure 1**

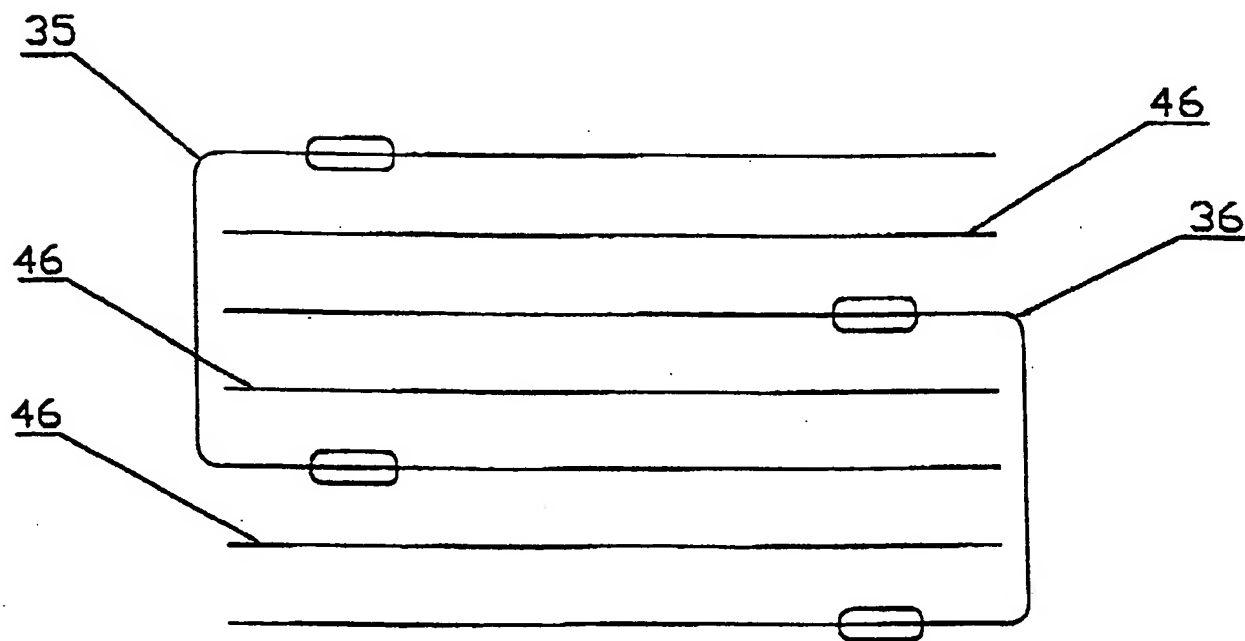
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**Figure 2**

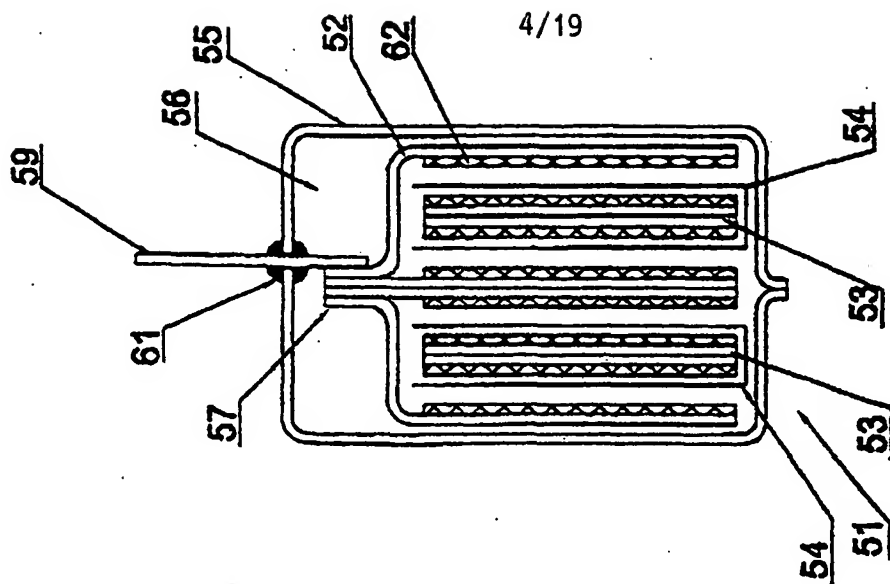
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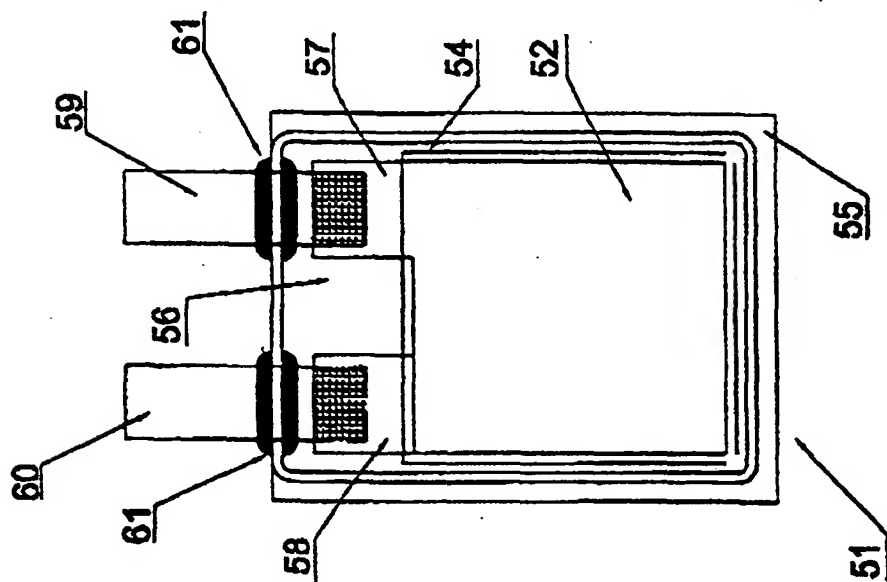
**Figure 3**



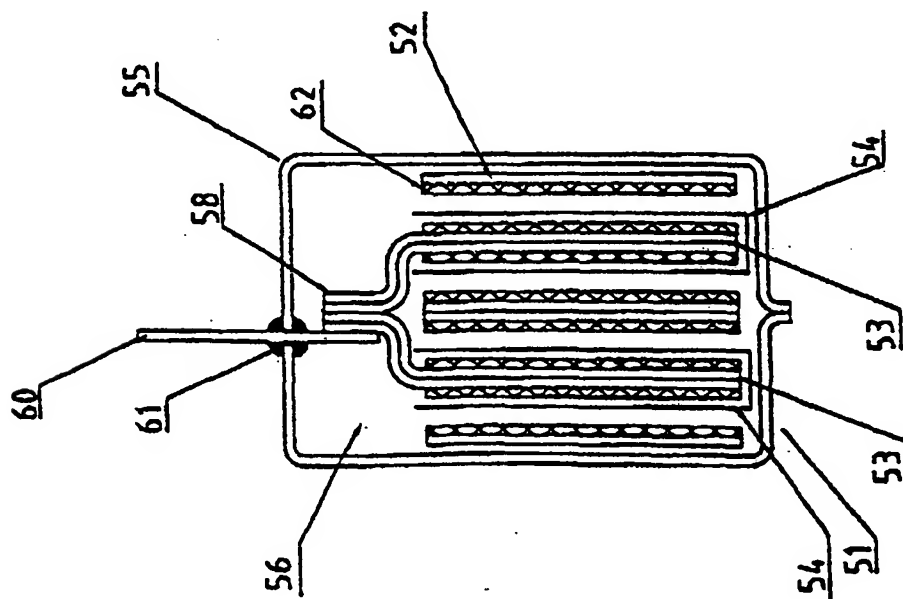
**Figure 4**



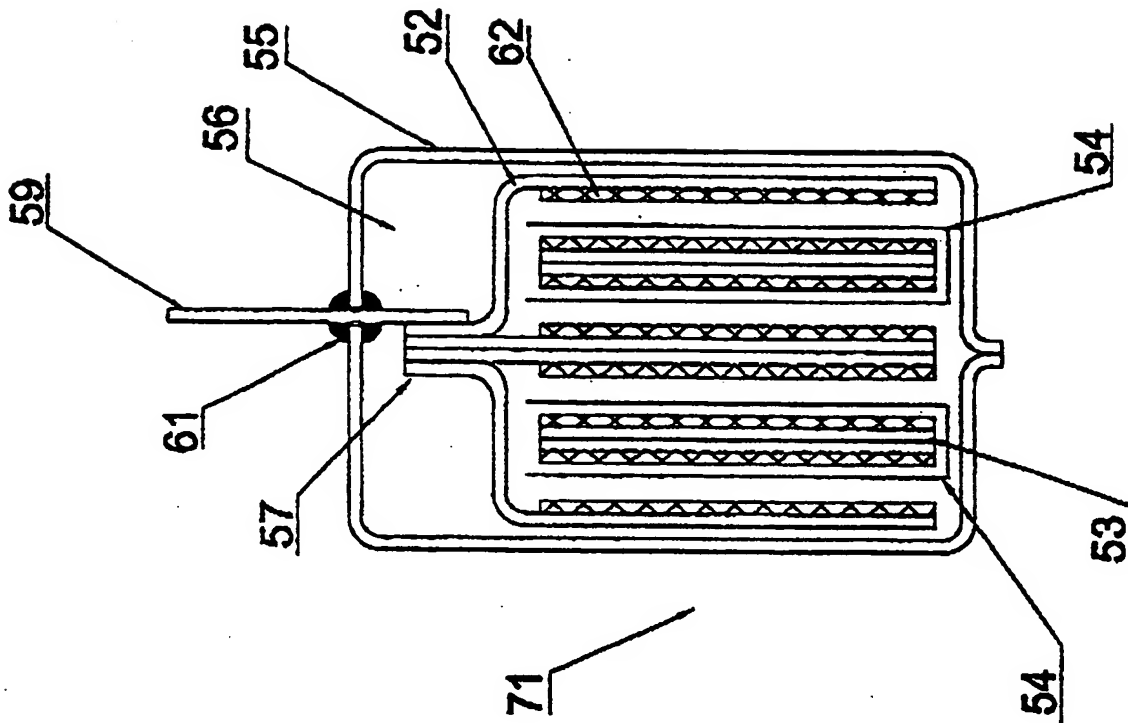
**FIG. 7**



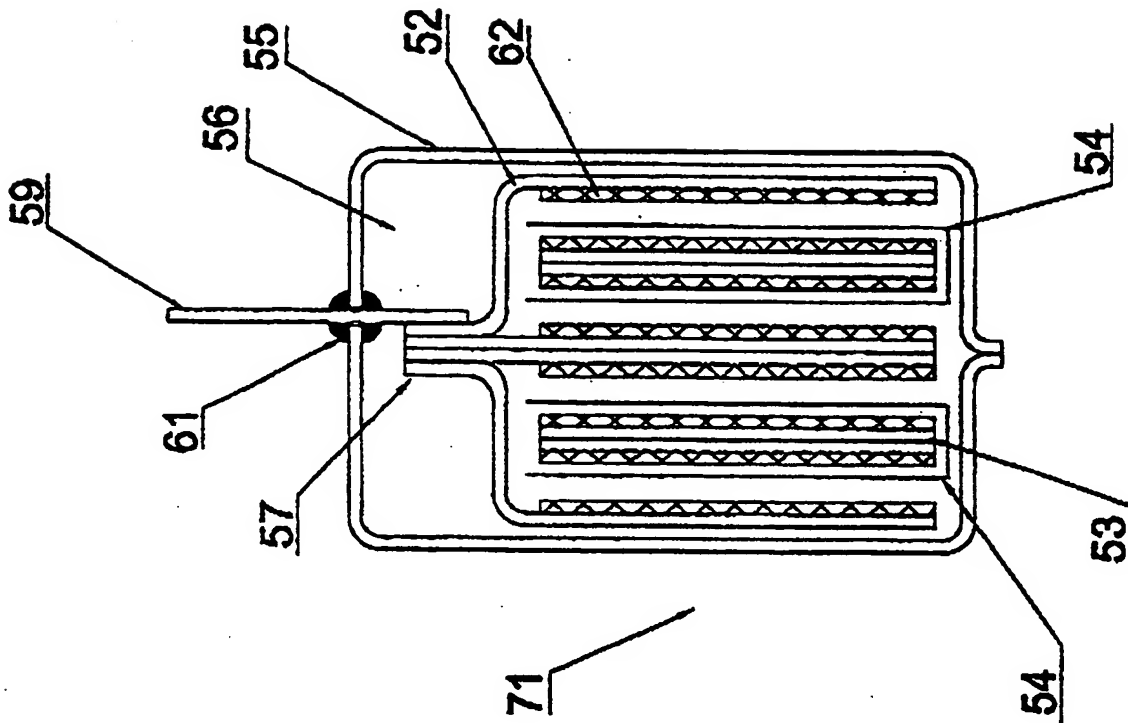
**FIG. 5**



**FIG. 6**

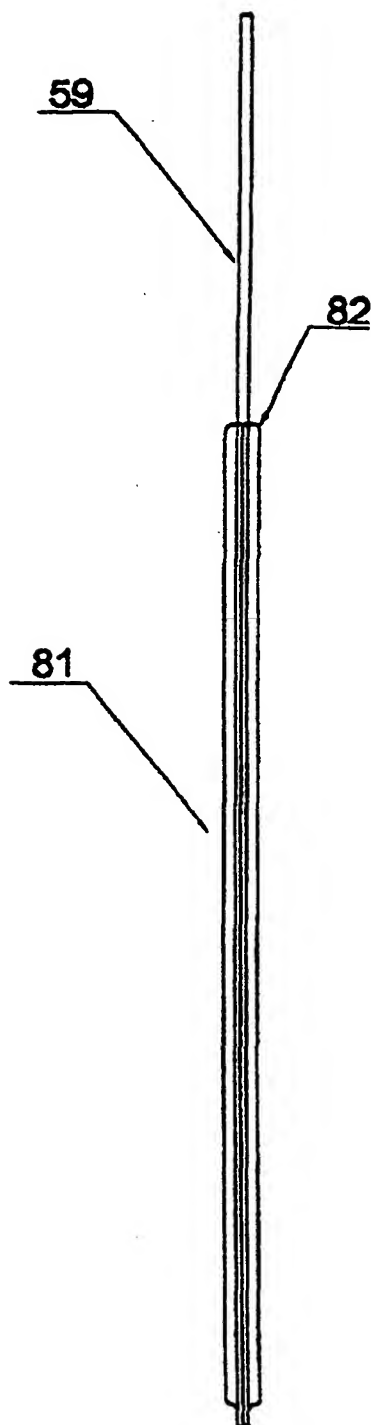


**FIG. 8**

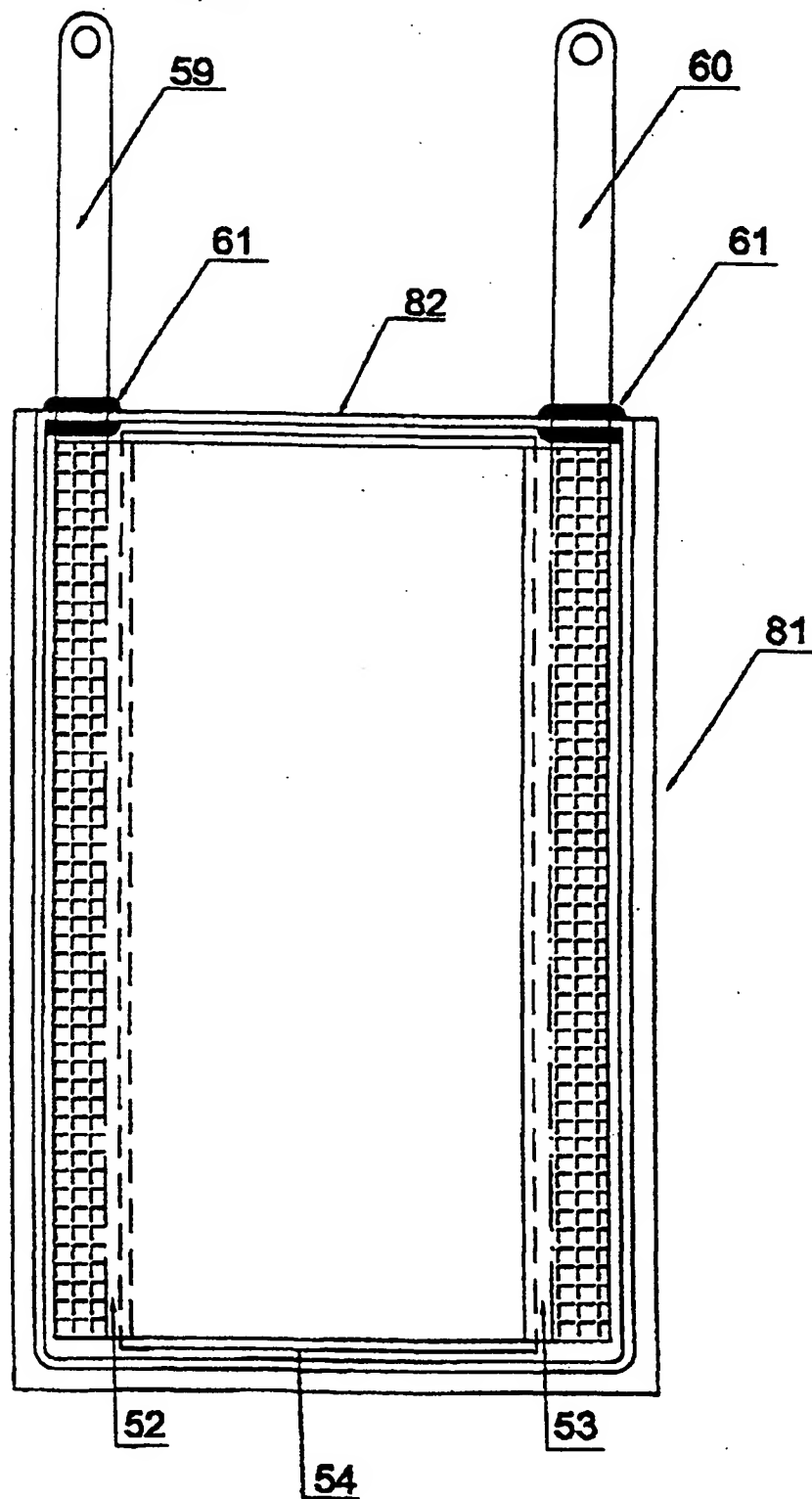


**FIG. 9**

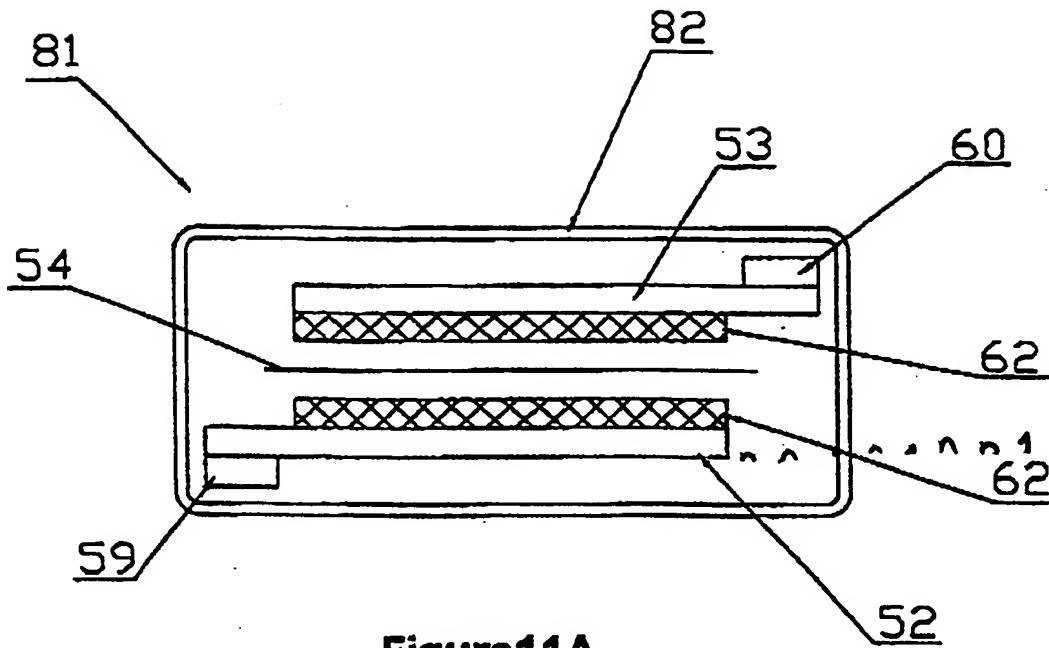
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**FIG. 11**



**FIG. 10**



**Figure 11A**

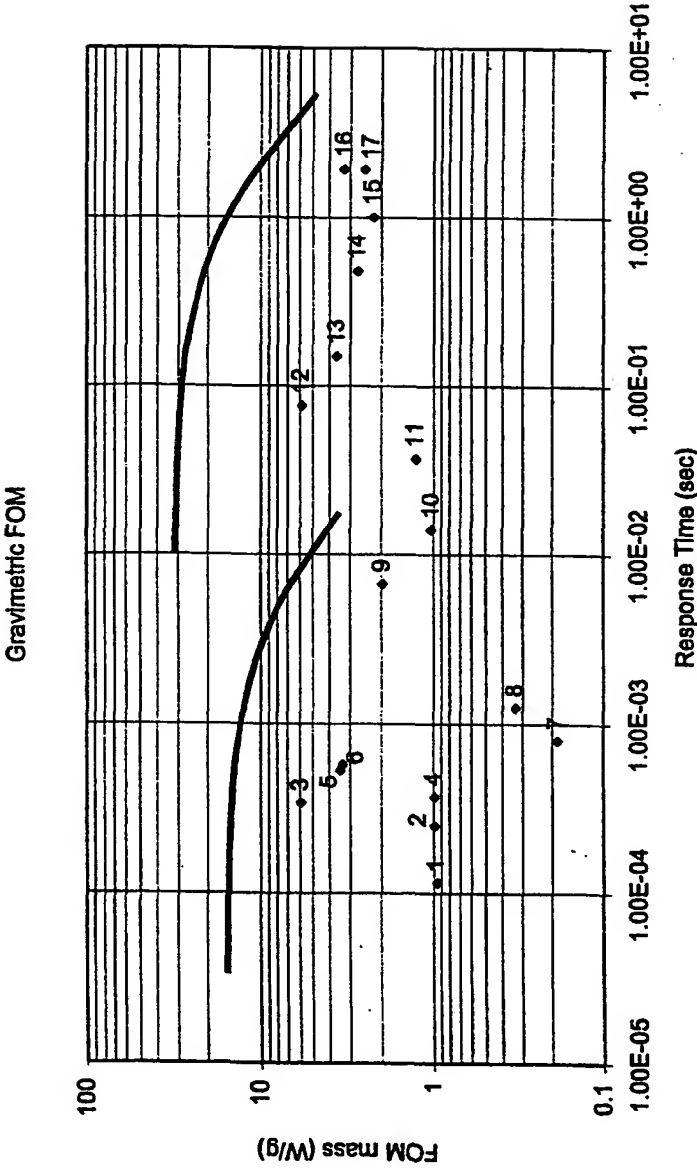


Figure 12



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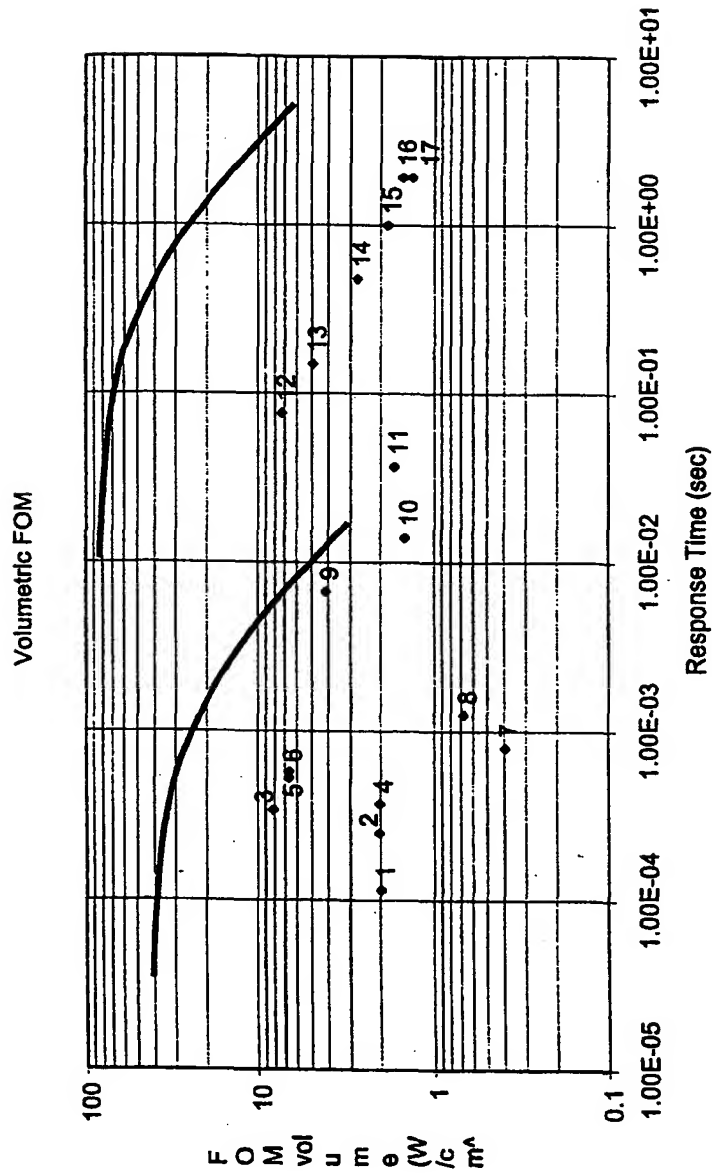


Figure 13

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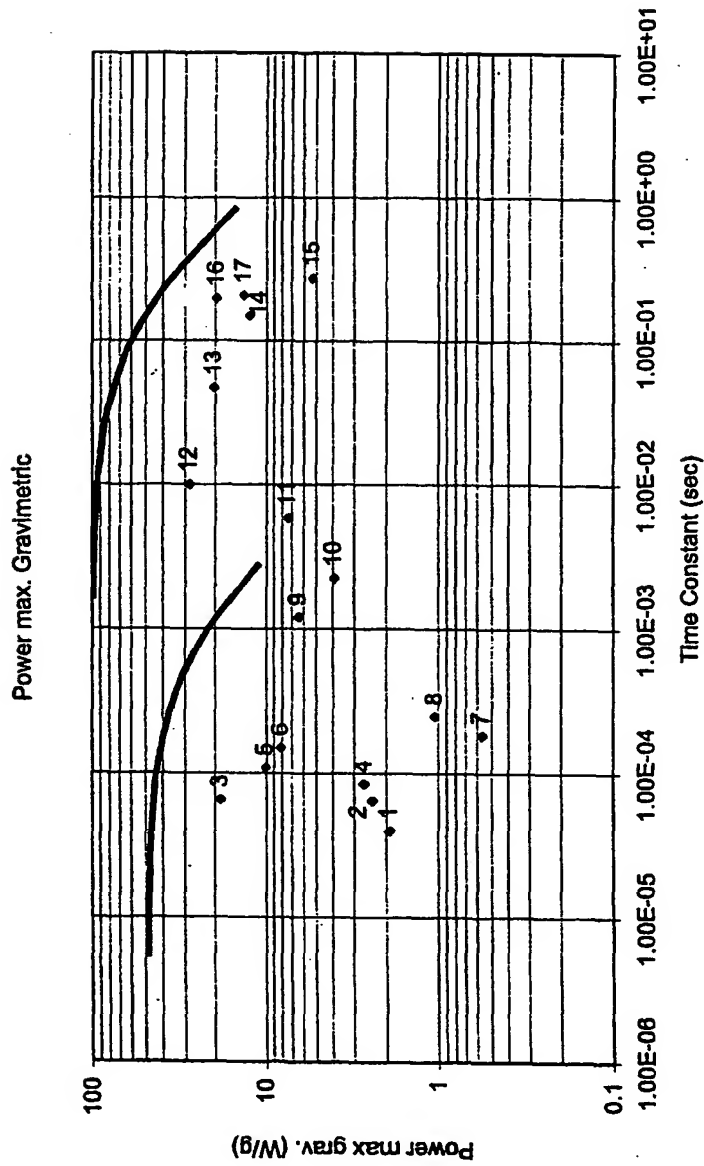


Figure 14

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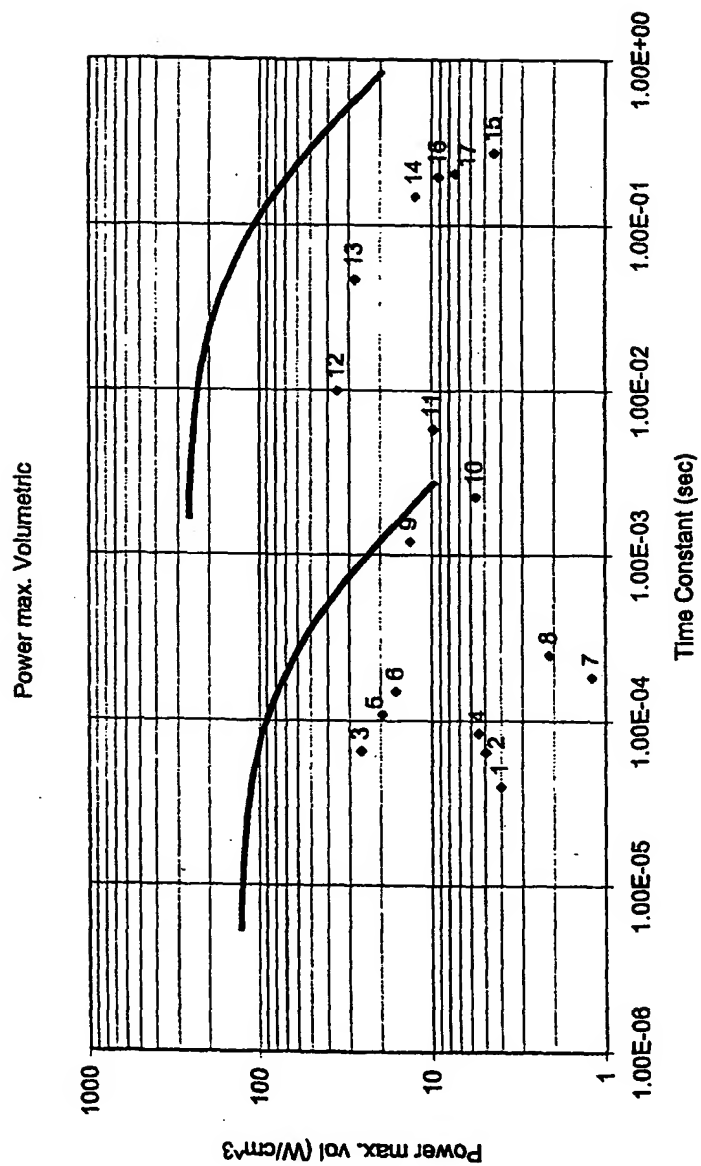


Figure 15

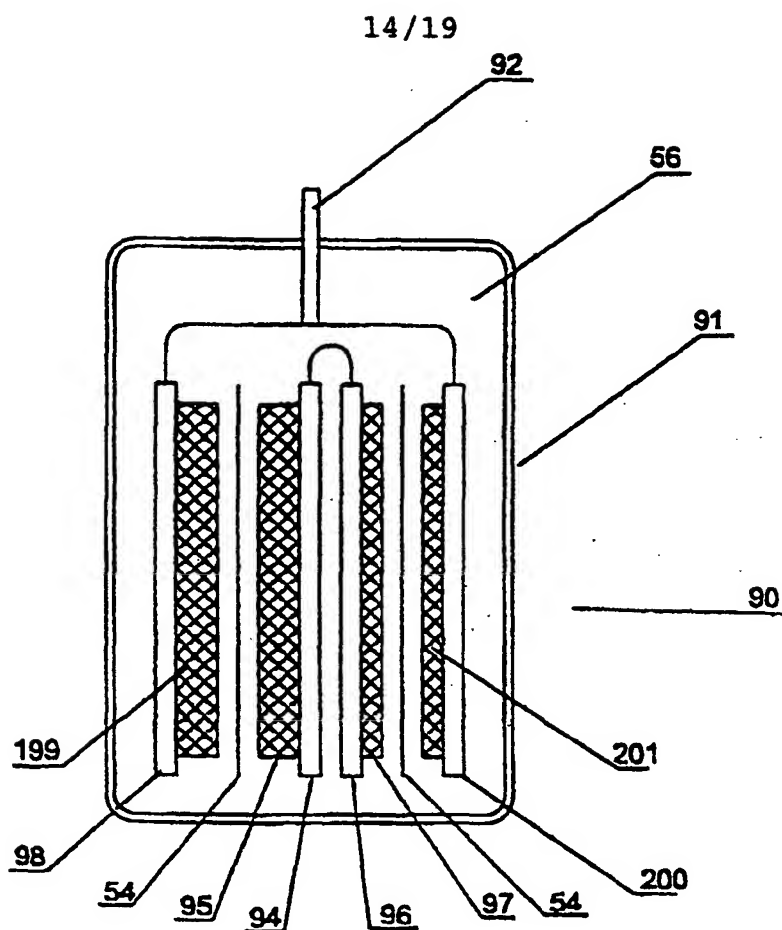
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| thickness  | time const | power (W/g) | power (W/cc) | resp time | FOMgrav | FOMvol |
|------------|------------|-------------|--------------|-----------|---------|--------|
| HF-3       |            |             |              |           |         |        |
| 1          | 0.00000544 | 48.64       | 128.52       | 0.0000    | 15.48   | 40.91  |
| 2          | 0.00001088 | 48.32       | 125.46       | 0.0001    | 15.38   | 39.94  |
| 5          | 0.0000272  | 47.38       | 117.1        | 0.0002    | 15.08   | 37.27  |
| 10         | 0.0000544  | 45.89       | 105.39       | 0.0003    | 14.61   | 33.55  |
| 20         | 0.0001088  | 43.17       | 87.83        | 0.0007    | 13.74   | 27.96  |
| 50         | 0.000272   | 36.46       | 58.55        | 0.0017    | 11.61   | 18.84  |
| 100        | 0.000544   | 29.3        | 37.84        | 0.0034    | 9.33    | 11.98  |
| 200        | 0.001088   | 20.9        | 21.96        | 0.0068    | 6.65    | 6.99   |
| 500        | 0.00272    | 11.24       | 9.76         | 0.0171    | 3.58    | 3.11   |
| cap-XXHfPo |            |             |              |           |         |        |
| 1          | 0.001653   | 98.31       | 261.02       | 0.0104    | 31.29   | 83.09  |
| 2          | 0.003306   | 97.26       | 254.81       | 0.0208    | 30.96   | 81.11  |
| 5          | 0.008265   | 94.24       | 237.82       | 0.0519    | 30.00   | 75.70  |
| 10         | 0.01653    | 89.62       | 214.04       | 0.1039    | 28.53   | 68.13  |
| 20         | 0.03306    | 81.6        | 178.77       | 0.2077    | 25.97   | 58.90  |
| 50         | 0.08265    | 64.34       | 118.91       | 0.5193    | 20.48   | 37.85  |
| 100        | 0.1653     | 47.56       | 76.44        | 1.0386    | 15.14   | 24.33  |
| 200        | 0.3306     | 31.26       | 44.59        | 2.0772    | 9.95    | 14.19  |
| 500        | 0.8265     | 15.42       | 19.82        | 5.1931    | 4.91    | 6.31   |

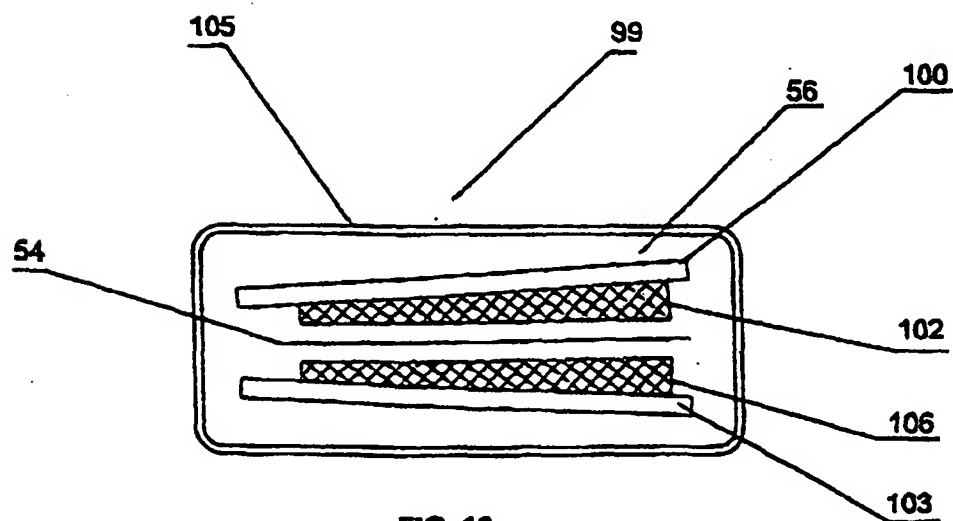
Figure 16

|               | Capacitance<br>F | Resistance<br>milliohms | Voltage<br>V | Mass   |         | Volume<br>cc     | Size<br>mm x mm x mm | Response<br>Time<br>sec | FOM<br>mass<br>kW/kg | FOM Vol<br>W/cc | Time<br>constant<br>sec | Pgrav max<br>kW/kg | Pvol<br>max<br>W/cc | Thickness<br>mm<br>um |
|---------------|------------------|-------------------------|--------------|--------|---------|------------------|----------------------|-------------------------|----------------------|-----------------|-------------------------|--------------------|---------------------|-----------------------|
|               |                  |                         |              | g      | cc      |                  |                      |                         |                      |                 |                         |                    |                     |                       |
| Prior Art 1   |                  |                         | 2.5          | 4.4    | 3.01    |                  | 11.2 x 30.5          | 6.30E-01                | 2.06                 | 3.02            |                         |                    |                     |                       |
| Prior Art 2   |                  |                         | 2.3          | 34.0   | 30.55   | 33.6 x 17.1 x 53 | 6.30E+00             | 6.30E+00                | 0.98                 | 1.10            |                         |                    |                     |                       |
| Prior Art 3   |                  |                         | 15.0         | 4800.0 | 1440.00 | 17 x 17 x 5      | 8.70E-02             | 8.70E-02                | 0.96                 | 3.20            |                         |                    |                     |                       |
| 1 HF-7        | 0.00036          | 110.43                  | 2.5          | 7.3    | 3.52    | 110 x 100 x      | 1.15E-04             | 1.15E-04                | 0.98                 | 2.00            | 3.98E-05                | 1.93               | 4.02                | 12                    |
| 2 HF-9        | 0.00074          | 86.98                   | 2.5          | 7.5    | 3.83    | 110 x 100 x      | 2.50E-04             | 2.50E-04                | 0.99                 | 2.04            | 6.44E-05                | 2.39               | 4.95                | 24                    |
| 3 HF-3        | 0.00450          | 14.50                   | 2.5          | 5.8    | 4.18    | 110 x 100 x      | 3.40E-04             | 3.40E-04                | 5.91                 | 8.20            | 6.53E-05                | 18.57              | 25.78               | 12                    |
| 4 HF-11       | 0.00112          | 75.03                   | 2.5          | 7.9    | 3.85    | 110 x 100 x      | 3.70E-04             | 3.70E-04                | 0.99                 | 2.03            | 8.40E-05                | 2.84               | 5.41                | 36                    |
| 5 HF-5        | 0.00478          | 22.88                   | 2.5          | 8.8    | 3.52    | 110 x 100 x      | 5.28E-04             | 5.28E-04                | 3.44                 | 6.68            | 1.08E-04                | 10.10              | 19.57               | 12                    |
| 6 HF-13       | 0.00548          | 27.25                   | 2.5          | 7.0    | 3.52    | 110 x 100 x      | 5.71E-04             | 5.71E-04                | 3.33                 | 6.66            | 1.49E-04                | 8.14               | 16.29               | 12                    |
| 7 HF-16       | 0.00051          | 358.50                  | 2.5          | 7.7    | 3.83    | 110 x 100 x      | 8.00E-04             | 8.00E-04                | 0.19                 | 0.40            | 1.83E-04                | 0.57               | 1.20                | 12                    |
| 8 HF-17       | 0.00130          | 190.80                  | 2.5          | 7.8    | 3.85    | 110 x 100 x      | 1.25E-03             | 1.25E-03                | 0.34                 | 0.68            | 2.48E-04                | 1.05               | 2.13                | 36                    |
| 9 HF-18       | 0.03520          | 34.10                   | 2.5          | 7.2    | 3.41    | 110 x 100 x      | 6.67E-03             | 6.67E-03                | 1.97                 | 4.13            | 1.20E-03                | 6.40               | 13.44               | 12                    |
| 10 HF-2       | 0.03200          | 70.00                   | 2.5          | 5.7    | 3.96    | 110 x 100 x      | 1.40E-02             | 1.40E-02                | 1.03                 | 1.48            | 2.24E-03                | 3.93               | 5.64                | 12                    |
| 11 cap-XX     | 0.33000          | 17.80                   | 2.5          | 12.0   | 9.01    | 85 x 53 x 2      | 3.70E-02             | 3.70E-02                | 1.27                 | 1.69            | 5.81E-03                | 7.40               | 9.85                | 12                    |
| 12 cap-XXHIPO | 0.54800          | 18.10                   | 5.0          | 12.2   | 9.80    | 40 x 35 x 7      | 7.63E-02             | 7.63E-02                | 5.83                 | 7.26            | 9.92E-03                | 28.30              | 35.24               | 6                     |
| 13 cap-XX,10  | 10.40000         | 4.50                    | 2.5          | 17.0   | 12.50   | 50 x 50 x 5      | 1.50E-01             | 1.50E-01                | 3.60                 | 4.90            | 4.88E-02                | 20.42              | 27.78               | 12                    |
| 14 cap-XX,30  | 29.70000         | 6.00                    | 2.5          | 25.0   | 25.00   | 50 x 50 x 10     | 4.80E-01             | 4.80E-01                | 2.71                 | 2.71            | 1.49E-01                | 12.50              | 12.50               | 36                    |
| 15 cap-XX,250 | 272.50000        | 1.00                    | 2.5          | 295.0  | 355.30  | 190 x 110 x 18   | 1.00E+00             | 1.00E+00                | 2.20                 | 1.83            | 2.73E-01                | 6.30               | 4.40                | 36                    |
| 16 DC-3       | 17.34000         | 11.30                   | 2.5          | 7.0    | 15.13   | 81 x 95 x 1.75   | 1.92E+00             | 1.92E+00                | 3.28                 | 1.51            | 1.96E-01                | 19.73              | 9.14 60/100         |                       |
| 17 Wed        | 14.88000         | 14.00                   | 2.5          | 8.2    | 15.13   | 81 x 95 x 1.75   | 1.92E+00             | 1.92E+00                | 2.45                 | 1.33            | 2.06E-01                | 13.61              | 7.38 30/70          |                       |

FIGURE 17



**FIG. 18**

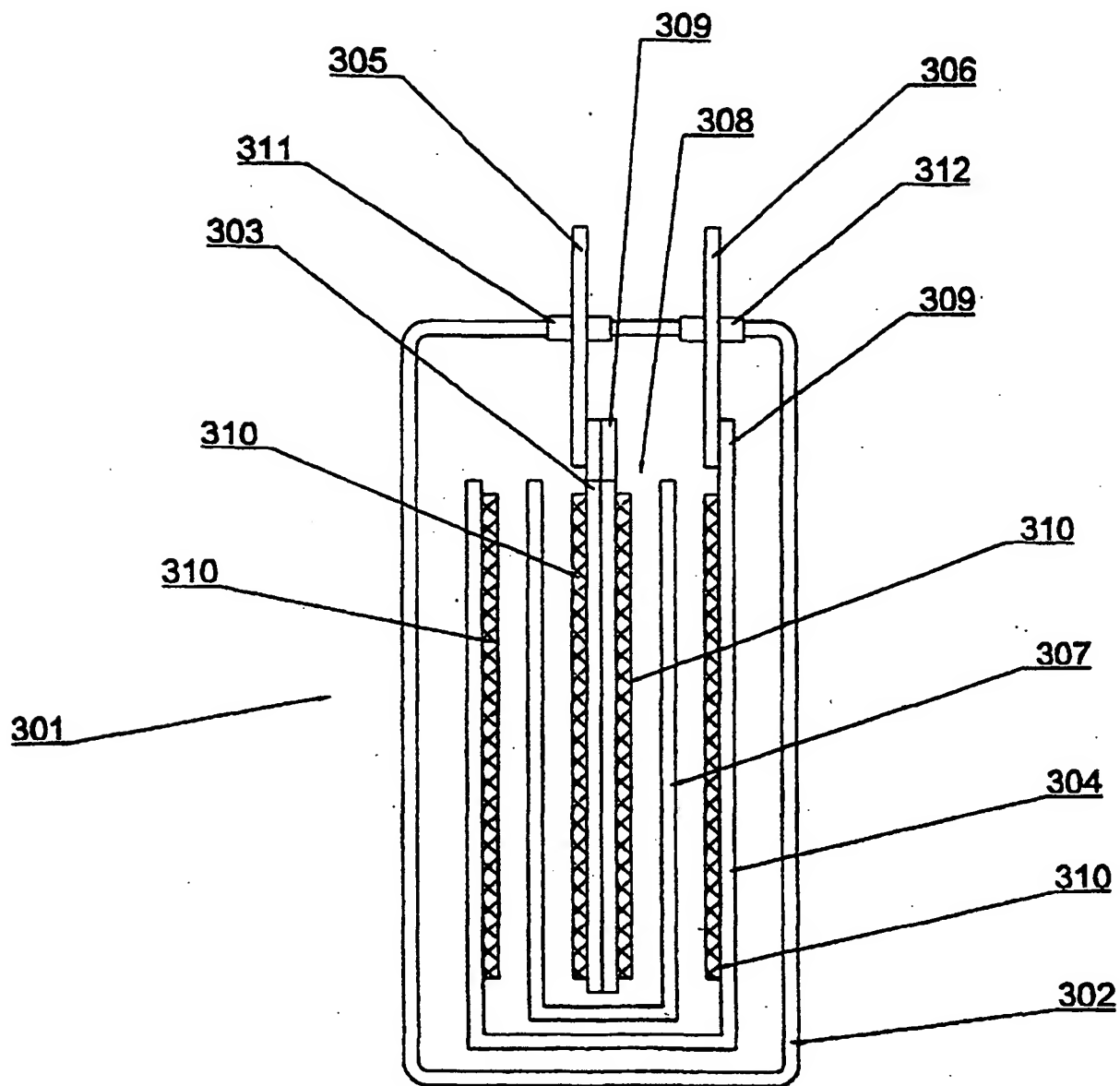


**FIG. 19**

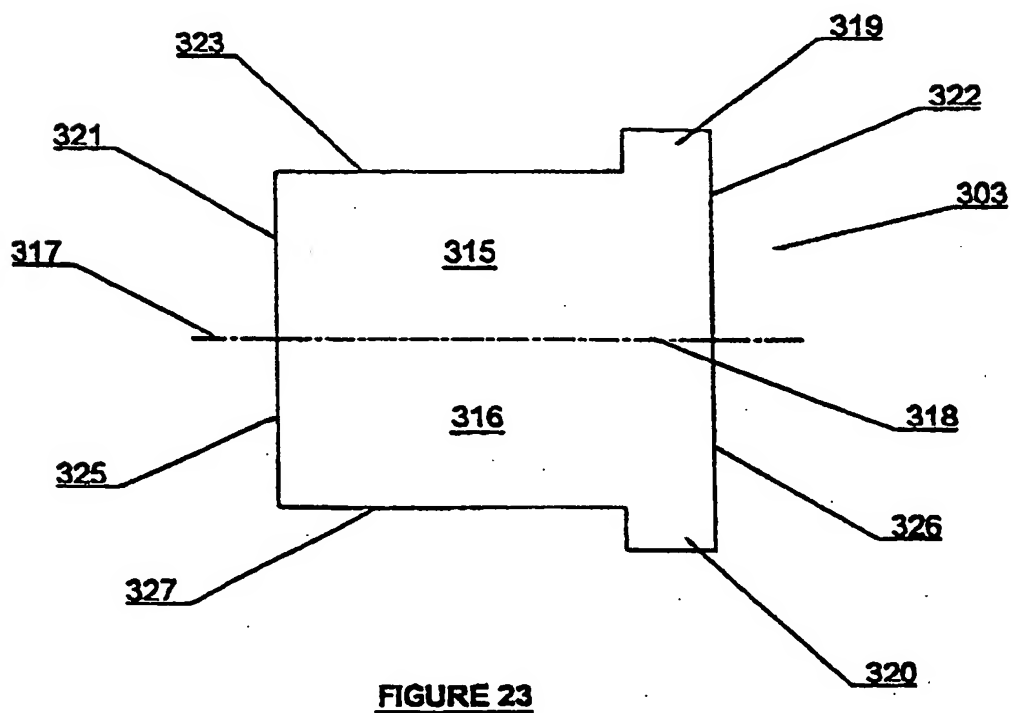
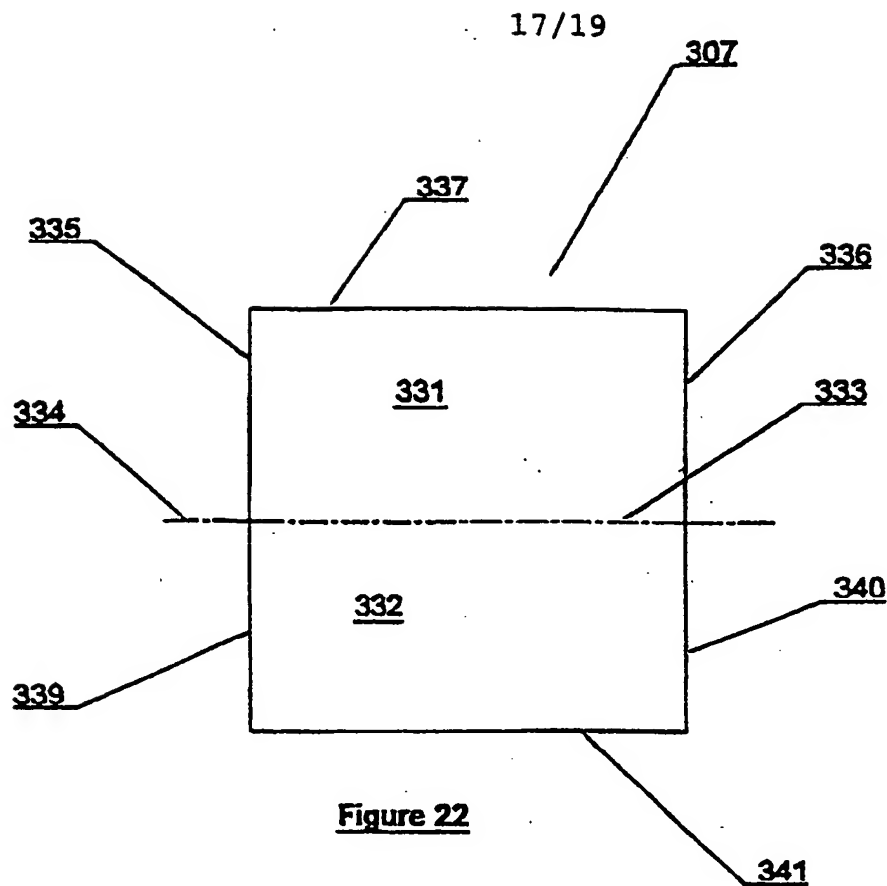
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| HF-1      | HF-4      | HF-8      | HF-10     | HF-12     | HF-6      | HF-14     | HF-15     | HF-19     |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 0.03500   | 0.00800   | 0.00037   | 0.00077   | 0.00118   | 0.00479   | 0.00574   | 0.00054   | 0.03400   |
| 87.00     | 14.40     | 112.24    | 85.78     | 75.52     | 22.68     | 28.08     | 378.80    | 38.20     |
| 2.5       | 2.5       | 2.5       | 2.5       | 2.5       | 2.5       | 2.5       | 2.5       | 2.5       |
| 6.6       | 6.4       | 7.1       | 7.7       | 7.8       | 7.7       | 7.1       | 8.1       | 7.2       |
| 3.98      | 4.18      | 3.52      | 3.83      | 3.85      | 3.52      | 3.52      | 3.83      | 3.41      |
| 110 x 100 | 110 x 100 | 110 x 100 | 110 x 100 | 110 x 100 | 110 x 100 | 110 x 100 | 110 x 100 | 110 x 100 |
| 1.94E-02  | 5.28E-04  | 1.35E-04  | 2.50E-04  | 3.85E-04  | 5.26E-04  | 5.88E-04  | 9.09E-04  | 7.14E-03  |
| 0.80      | 4.97      | 0.67      | 0.68      | 0.71      | 2.18      | 2.33      | 0.12      | 1.26      |
| 1.14      | 7.63      | 1.35      | 1.44      | 1.44      | 4.71      | 4.71      | 0.28      | 2.65      |
| 3.05E-03  | 1.15E-04  | 4.15E-05  | 8.80E-05  | 8.91E-05  | 1.09E-04  | 1.81E-04  | 2.03E-04  | 1.30E-03  |
| 3.19      | 16.90     | 1.86      | 2.38      | 2.65      | 8.98      | 7.81      | 0.52      | 6.71      |
| 4.64      | 25.98     | 3.85      | 5.02      | 5.37      | 19.57     | 15.82     | 1.14      | 12.00     |
| 12        | 12        | 12        | 24        | 38        | 12        | 12        | 12        | 12        |

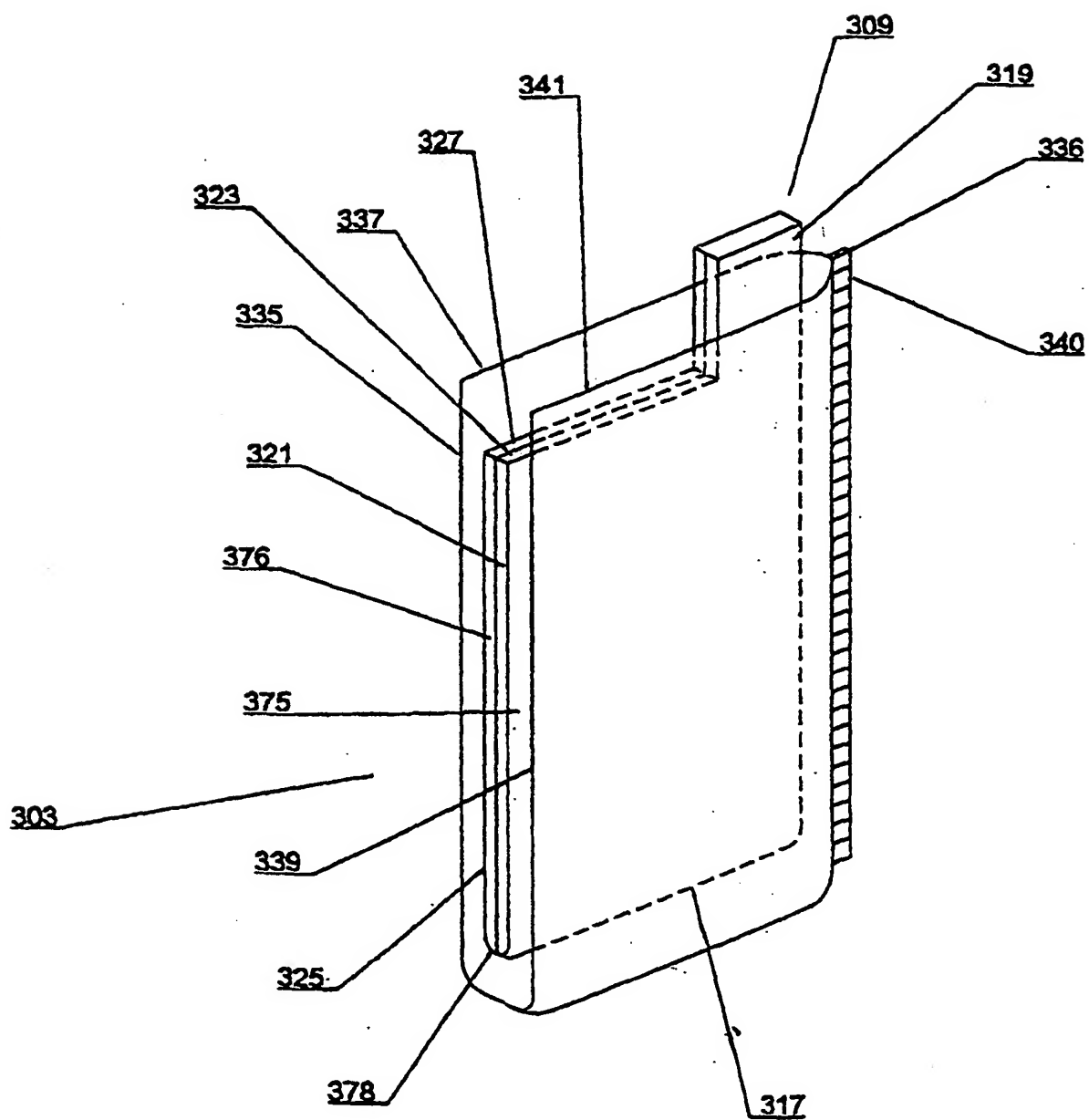
FIGURE 20

**FIGURE 21**

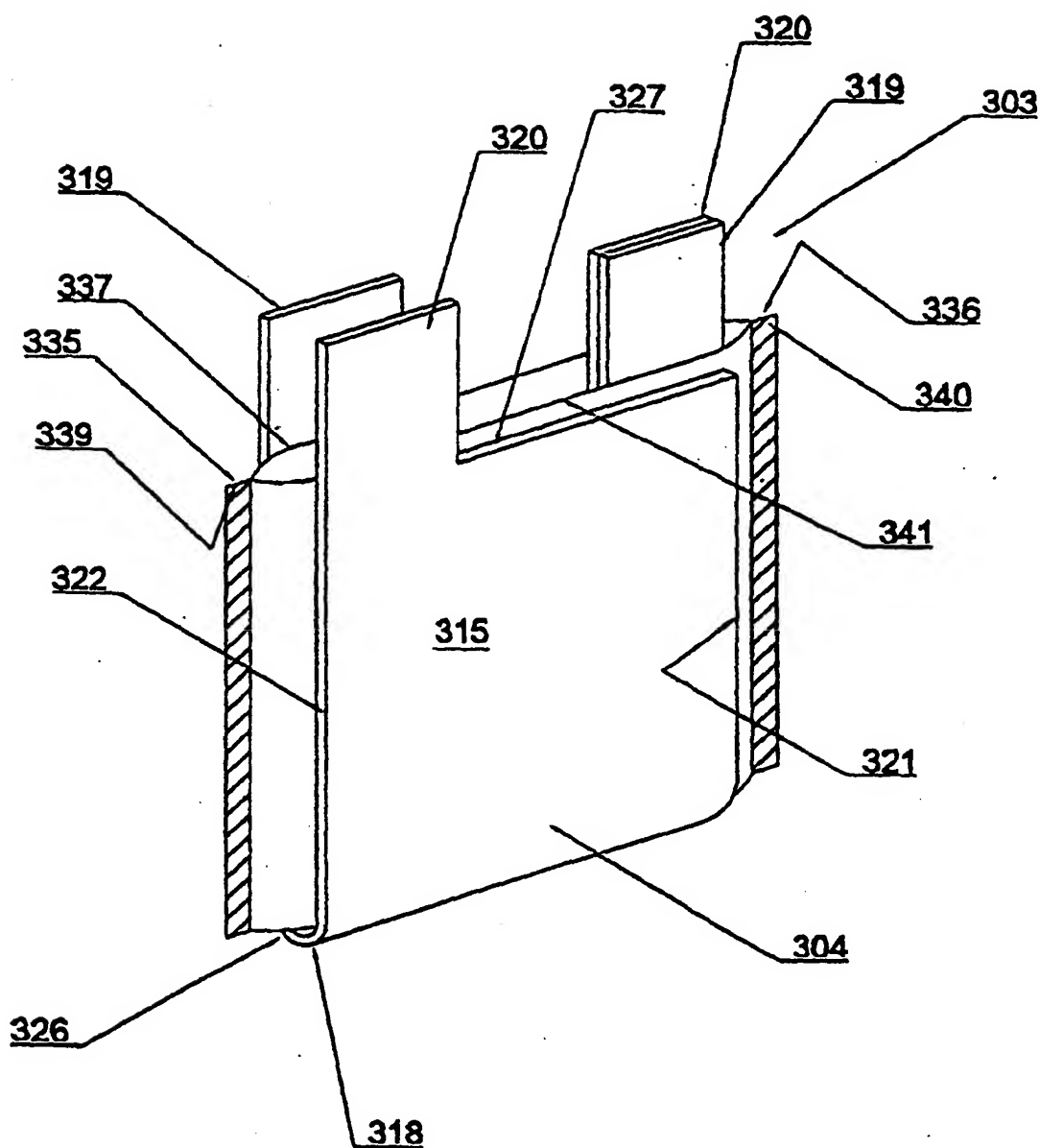




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**Figure 24**

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**FIGURE 25**